ABSTRACT OF THE DISCLOSURE

Noise adding unit 700 reads the downloaded target JPEG image from memory and adds designated noise to that JPEG image. Reverse DCT transformation unit 710 performs reverse discrete cosine transformation on the noise-added JPEG image, and transforms it from space frequency to spatial coordinates. Binarization unit 720 binarizes the image that has been expanded to spatial coordinates.

This makes it possible to achieve the same processing as half-tone processing on images that have undergone normal orthogonal transformation without putting a large burden on the CPU, etc. and with a small data volume even when transferring via a communication path.